Robust Controller Design for Slewing Maneuver and Vibration Control of Flexible Spacecraft

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Slewing maneuver and vibration suppression control of flexible spacecraft model by robust control theory are considered. The specific model considered in this paper consists of a rigid hub with an elastic appendage attached to the central hub and tip mass. Attitude control to point and stabilize single axis using reaction wheel type device is tested. To control all flexible modes is so critical to designing an active control law. We therefore designed a robust controller by using Quantitative Feedback Theory. It is shown that the designed controller with the proposed configuration gives satisfactory results in gain, phase margin, band width, and steady state tracking performance for flexible spacecraft, respectively.